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ASSEMBLY INTERIM COMMITTEE
ON TRANSPORTATION AND COMMERCE
Tom Carrell, Chairman

HELICOPTER FACILITIES IN
THE SAN FRANCISCO BAY AREA
January 28, 1964
San Francisco, California

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ASSEMBLY INTERIM COMMITTEE ON TRANSPORTATION AND COMMERCE

Tom Carrell, Chairman

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ASSEMBLY INTERIM COMMITTEE
ON
TRANSPORTATION AND COMMERCE

January 28, 1964
1:30 p.m.

1194 State Building
San Francisco, Calif.

Committee Members Present

Tom Carrell, Chairman
Joe A. Gonsalves, Vice-Chairman
Charles E. Chapel
Gordon Cologne
Richard J. Donovan
John Francis Foran
Joseph M. Kennick
Charles W. Meyers
Charles Warren

Committee Staff Members Present

Lisa Barrigan, Secretary
Bill Scheuermann, Jr., Consultant
Western Monroe, Sergeant-at-Arms

* * * * * * *

CHAIRMAN TOM CARRELL: (Following call to order and introduction of members and staff): This is a hearing by the Assembly Interim Committee on Transportation and Commerce, called to order under the provisions of House Resolution 500.22 (1963), to consider testimony relating to various subject matters referred for interim study by the Assembly Rules Committee following the 1963 General Session, and at the special request of Assemblyman Foran, to receive testimony on the subject of the planning, location, and design of helicopter facilities in the San Francisco Bay Area.

* NOTE: This transcript has been condensed and edited by the committee staff. A verbatim recording of the hearing is available for use in the committee offices, Suite 5004 State Capitol, Sacramento, California

ASSEMBLYMAN JOHN FRANCIS FORAN: I just would like to make a preliminary statement about this entire subject. We did have a heliport in San Francisco at the Ferry Building property of the San Francisco Port Authority. However, the safety features of that particular area were put in question and it was concluded that it would no longer be safe to allow helicopters to land there. I requested that this matter be put on the agenda for this committee hearing because I think it is important to the entire concept of movement of our people to and from our airports and elsewhere in the Bay Area. It will have an effect of relieving the traffic congestion on our freeways, and it will also be a service to the citizens of San Francisco, as well as other citizens of the Bay Area, as far as the movement of traffic.

Because it is a very compact city, the difficulty in finding a landing site for a heliport is considerable in San Francisco. There are very few areas which can provide a site such as the San Francisco-Oakland East Bay Terminal Building, which would permit landing and take-off in the general downtown area of San Francisco. There is merit to using the roof of the facility, now not being used for any purpose at all, for this particular heliport development, which will relieve to a good extent considerable congestion of the traffic problem in San Francisco.

MR. RANDALL SHIELDS, PUBLIC AFFAIRS MANAGER, SAN FRANCISCO CHAMBER OF COMMERCE: The San Francisco Chamber of Commerce Board of Directors, at the request of the Aviation Section, which has made a rather detailed study of this whole question of heliports in San Francisco, voted very recently to support and to expedite the establishment of a heliport on the roof of the Trans-Bay Terminal Building that Assemblyman Foran has mentioned. We feel that, while this seems to be essentially an obligation of the City and County to construct the heliport, possibly as an

adjunct or a downtown branch of the San Francisco International Airport, there is a wide area for the cooperation of State agencies. The plan we contemplated indicates that the city may negotiate with the State for a lease of this facility for $1 a year, and that the State may also assist in the construction of a needed elevator.

MR. EDWIN M. WILSON, CHAIRMAN, AVIATION SECTION, SAN FRANCISCO CHAMBER OF COMMERCE:

The San Francisco Chamber is extremely pleased that you are considering the heliport for San Francisco. We know that Los Angeles County has 25 heliports and currently San Francisco County has none. We feel it's a dire need that a heliport be in San Francisco. We have selected, after four or five years of off and on concentration on this subject, the Trans-Bay Terminal, governed by the Toll Bridge Authority. This facility is right on the edge of the financial district, has waiting areas, a couple of restaurtants, a cocktail lounge, all the facilities that you would want in a transportation facility.

It's a big building on the corner of First and Mission, the long shed where all the buses come in now, where the trains used to come in.

The shed, a very heavy structure, is 750 feet long and 163 feet wide. We envision the use of the top of this structure to furnish commuter and executive helicopter service.

Our committee, and the Board of Directors of the San Francisco Chamber, made these recommendations:

1. That the City and County of San Francisco lease the roof of the Trans-Bay Terminal from the State for a consideration of $1 a year;

2. That the City then proceed immediately to construct as a phase of a permanent heliport, a platform for the take-off and landing of single-engine helicopters;

3. The Division of Bay Toll Crossings be requested to install an elevator to the terminal roof, which would not only be used for helicopters, but also for bus passengers.

4. Negotiations for federal funds for the project be concluded with the Federal Aviation Agency;

5. That anticipated revenues from the heliport operation, as well as airport revenues, be utilized to finance that portion of the project not receiving federal funds; the heliport should be considered a necessary extension of the airport proper; and

6. The loan be amortized over a longer period of time than the 20-year period previously contemplated.

MR. M. F. BAGAN, PRESIDENT, SAN FRANCISCO-OAKLAND HELICOPTER AIRLINES: Let me say at the outset, I am convinced of the importance of your considerations, for from personal experience, I am satisfied that the location of a heliport and the quality of the terminal facility will determine in very large measure whether a community with sufficient population to warrant scheduled helicopter service will be able to attract and sustain such a service. The helicopter can be an important cog in an integrated transportation system. It offers the public speed, convenience and safety of travel. But a helicopter service will only be patronized if the ground facilities are properly located, attractively constructed and appropriately maintained.

It may be of merit, before discussing urban heliport facilities,

to briefly review the history of SFO Helicopter Airlines, since my views are those of an operator of a certificated scheduled helicopter airline, and are obviously influenced by my experience in this field.

BACKGROUND

Our company is the youngest scheduled airline in the industry. SFO Helicopter Airlines was formed three years ago with a three-fold purpose: (1) To provide the residents of this rapidly expanding metropolitan San Francisco Bay Area with regularly scheduled helicopter service, (2) to provide a quality of service unexcelled by any helicopter airline in the world, and (3) to demonstrate the sincerity of our belief that the service was needed and that the public would quickly respond to it, by organizing, developing and operating our company during its most critical period of development without the aid of federal subsidy.

In the early spring of 1961, SFO Helicopter Airlines was little more than a paper organization: we had no equipment, no landing facilities and certainly no passengers. On June 1, 1961, our scheduled flight operations began.

Since that time, public acceptance and support of our service has been nothing short of remarkable. Our traffic growth has set records unparalleled in the history of helicopter airline transportation. At the end of our first year of scheduled flight operations, we had carried 104,000 passengers. At the conclusion of our second year's operation, we had carried approximately 130,000 passengers. This year we expect our traffic growth to continue at the same or an accelerated pace. We now forecast our third-year passenger traffic will be between 150,000 and 175,000 persons.

Two months ago we became the only scheduled helicopter carrier in the United States with a permanent certificate of public convenience and necessity. The certificate was issued by the Civil Aeronautics Board of the United States. There are now three other scheduled helicopter carriers with federal certificates in Los Angeles, New York and Chicago, but all are issued on a temporary basis. Each of the other carriers is receiving substantial federal subsidy aid.

Prior to the inauguration of service, we made an intensive study of the San Francisco-Oakland Bay Area. Our investigation revealed that this area most urgently needs scheduled helicopter service. The reasons are quite evident.

AREA OF OPERATION

The geographical area which we are now serving and which will be served by SFO Helicopter Airlines as our route system develops, is experiencing a population explosion. A growth of 100,000 residents a

year is taking place in a region where natural water and mountain barriers subject all surface transportation to very circuitous routes. These natural barriers funnel surface traffic into increasingly congested narrow channels. Where the area of service is highly populated, where it is separated by barriers, whether natural or artificial, and where unreasonable periods of time are required to commute from point to point by surface travel, the optimum conditions exist for the operation of a scheduled helicopter service.

Let me give you just one illustration of the type of congestion residents of this area are experiencing, even with our advanced system of freeways. Every work day morning and evening automobiles on the main arteries leading into the central metropolitan areas are bumper-to-bumper for miles in each direction. When weather conditions are optimum and no accidents occur, the movement of traffic proceeds slowly, but under circumstances, reasonably. Let the rains come as they have recently, however, or let an accident occur, and the resulting congestion and traffic snarl is almost unbelievable. An acquaintance of mine living in Orinda took an incredible 4-1/2 hours to go to his Montogmery Street office and return to his home one day last week during the heavy rains. This is an exceptional case, but it did happen, and it illustrates the conditions of travel that exist today, even with our modern freeway network.

In my opinion, the population growth which is occurring throughout the state, and certainly in the Bay Area, is going to intensify the congestion of surface travel in the months and years to come. Because of it, movement between cities will become increasingly difficult, travel between the home and metropolitan centers will be further impeded and the time needed to reach our public airports by surface travel will be even more protracted.

I intend to discuss these problems which result from increased population in more detail in a minute, but let me first complete the record concerning our company's attempts to serve the traveling public in this area.

OPERATING EQUIPMENT

A traveler's decision to fly or not to fly by helicopter is influenced not only by the factors of speed and convenience, it is based also upon the consideration of safety and comfort. The latter two items are very important, and are directly associated with the aircraft.

CHAIRMAN CARRELL: Does your company own any heliports?

MR. BAGAN: No.

CHAIRMAN CARRELL: Are there any individually owned heliports in this area?

MR. BAGAN: There is one pad I can think of, at the Edgewater Inn near the Oakland Airport. It could be used with permission of the owner.

CHAIRMAN CARRELL: Our committee along with the Senate committee is studying the statewide airport situation and perhaps heliports should be included in that study.

MR. BAGAN: If we started building one heliport, we would be building heliports from now on. We are a certificated airline and have the same legal status in every way, in every manner, that United, TWA, American, Pacific, any other certificated airlines. I know of no certificated airline that ever built themselves their own airport and this is the same philosophy.

When SFO Helicopter inaugurated scheduled service we had two turbine-powered Sikorsky S-62 helicopters. In April, 1962, our company took delivery of a third S-62, and in November, 1963, a fourth.

Noise and vibration have a good deal to do with passenger comfort in helicopters. We have found that a great percentage of our passengers who fly by helicopter for the first time are pleasantly surprised by the moderate noise they experience as a result of the turbine engine. Actually, there is no comparison between the noise generated by a relatively quiet turbine engine and that of the older piston engine.

The boat-hulled S-62 was the first American amphibious helicopter to be certificated by the Federal Aviation Agency for operation over both land and water. This helicopter is capable of carrying ten passengers plus baggage at speeds of 100 miles per hour.

You may be interested to know that the operating performance factor of our company, using this equipment, has been most gratifying, with 96.5% of our scheduled flights being completed. I stress this figure because I feel the equipment we are using is not only safe and comfortable, but very dependable. With it, our utilization of 5-1/2 flight hours per day based on a seven-day week and our performance factors are among the highest, if not the highest, attained in the scheduled helicopter industry.

Before we started service, we were well aware that the public would settle for nothing less than first-class service and equipment of the highest quality.

SERVICE FEATURES

Service features of the helicopter airline do not include the food and in-flight services which are necessary with fixed-wing airlines. The features we stress are frequency of flights, modern attractive terminal facilities and ease of transfer between helicopter and fixed-wing carrier.

Our experience has shown that passengers will not wait for extended periods of time. Therefore, during heavy airline traffic periods, we offer flights every twenty to thirty minutes, and operate 82 flights daily between 6:00 a.m. and midnight, serving San Francisco International Airport, Oakland International Airport, downtown Oakland, and Berkeley. Frequently as the result of passenger demand, we are forced to add extra sections to our morning and evening flights. On Friday nights, we have as many as 15 extra sections.

By February 15, we expect to inaugurate service to Marin County. We will provide the same quality of service for the residents of that area that we now provide at the other points I just mentioned.

Inter-airline services are also a definite part of our operation. We have concluded reciprocal interline ticket and baggage agreements with all major domestic and international airlines. These agreements make it possible for an SFO Helicopter passenger to be ticketed jointly on SFO Helicopter and any of the world's scheduled airlines and have his baggage checked through to his destination on a single interline baggage check.

We are a partner to the Universal Air Ticket Credit Plan, one of the nation's most honored credit plans. Passengers holding air travel credit plan cards can purchase travel with no further identification and charges are made through the interline clearing house. SFO Helicopter also installed an interline reservation teletype circuit to connect with all scheduled airline reservations offices in the country.

In addition to these features, we have established joint fare agreements with the nation's major airlines. As a result, we are able to provide a single fare from our heliports to most destinations in the country at substantial savings. By way of an explanation, our fares are all the way from $7.50, $8.50 and $9.50 but normally if you tie this in with one of the major airlines on their long-haul flights, the fare is reduced to almost half -- to $3, $4, and $5.00. Since a helicopter is relatively expensive to operate, the route segments should be relatively short-haul in nature. Our flights are all short haul.

While speaking of the length of our route segments, I might add that it is my belief that the airline industry has pretty well

captured the so-called long-haul passenger market. However, by far the largest travel market in the country is the short-haul market -- trips less than one-hundred miles. Today air transportation has just scratched this market, and has been unable to effectively penetrate it to date. Experts in the transportation field agree, however, that the short-haul market offers the greatest growth potential for air transportation.

POINTS OF SERVICE

In its order granting our permanent certificate of public convenience and necessity, the Civil Aeronautics Board, authorized SFO Helicopter to provide service between San Francisco International Airport, Metropolitan Oakland International Airport, downtown San Francisco, downtown Oakland, Berkeley, Palo Alto, Sunnyvale, and points to Marin and Contra Costa Counties.

We fully intend to serve each of the points mentioned. We will be operating from a brand new heliport in Marin County in less than three weeks. We hope to inaugurate service to Contra Costa County within the next two to three months. Shortly thereafter we expect to resume service to the lower peninsula. Helicopter landing facilities have already been installed at the Sunnyvale-Mountain View International Science Center.

We obviously intend to again serve the downtown area of San Francisco as soon as adequate heliport facilities are made available. I intend to return to the subject of a downtown San Francisco Heliport in a moment, but before I do I would first like to state my views on the general subject of urban heliport facilities.

URBAN HELIPORT FACILITIES

I am always happy to discuss the subject of heliports, for we believe that we have the finest, most modern system of heliports in the world, and that the cities of San Francisco and Oakland have furnished us with prime gate and counter space at the airports we serve. I want to stress right now that our company strongly advocates over-all municipal planning and municipal ownership of the heliport facilities.

The advantages to be gained by municipal planning and ownership of heliports are many. Included among them are:

1. Municipal rights of condemnation and zoning to properly locate and protect the facility for maximum safety and convenience.

2. Inclusion of the heliport into the over-all plan for municipal air facilities with proper planning and construction which may qualify the facility for federal financial assistance through the National Airport Plan.

3. Centralized municipal facilities to enable the Federal Aviation Agency to more efficiently establish criteria for and regulate air traffic in the future congested downtown areas.

In the operation of our company, we are not interested in serving a community unless it is willing to provide the quality of heliport facilities we feel must be made available to the public to gain their approval. Unless a community is willing to provide such facilities, it is not really interested in scheduled helicopter service. Throughout the country here are approximately 12 small local service airlines like Pacific, Bonanza, Frontier, Ozarks, serving around 400 smaller cities through the US. All these carriers are authorized to serve a small community but all of these communities must provide a good facility for them. In turn we think the same of heliports in the Bay Area.

In the matter of design and location, we have consistently encouraged planning authorities to so locate and build a municipal heliport so as to provide a terminal which is socially acceptable. You cannot expect it to be used -- especially at night -- unless it is desirably placed. We believe that the chain of heliports which now surround the San Francisco Bay Area are as socially acceptable -- have the same social status -- as the better airports throughout the country. They are, in fact, small airline terminals located near the heart of each community we serve. Women and children can travel by day or night with safety, comfort and convenience to any point on our system. No passenger is ever left standing without help or without the facilities he might properly expect for his convenience.

Some of the major features of the heliports we operate are the following:

1. Experienced, uniformed agents on duty at all times during flight operations ---- from 6:00 a.m. until midnight.

2. Complete passenger and baggage service for all passengers.

3. Large, paved, lighted parking areas for use by passengers and their guests.

4. Colorful, modern, well lighted terminal buildings with all terminal conveniences such as passenger lounge, rest rooms, flight insurance, telephones, newspapers, vending machines and taxicabs.

5. Convenient location, near major traffic arteries.

SFO Helicopter acts as the fixed-base operator of the heliport in each community it serves. We supervise all operations at the heliport, and provide the routine daily maintenance required. Fire fighting equipment is kept in proper operating condition at all times. Our rental charge is based upon the traffic generated at the heliport, and is normally fixed at a rate of 25¢ per passenger. The facility is available for use by all helicopter operaters, when such use will not interfere with the scheduled helicopter service provided by our company. All such operators are charged a modest landing fee, which is shared equally by the municipality and by the fixed-base operator.

The heliport facilities which we operate (excluding the value of the land) have cost, on the average, approximately $25,000 to construct. To justify the expenditure of this sum of money by a city, the fixed base operator should be willing to pay a reasonable rental. It is our belief that a rental charge of 25¢ per passenger will normally permit a city to recoup its expenditure within three to five years.

In our opinion, municipal ownership with fixed base operation provided in the above manner has worked to the advantage of the municipalities involved, as well as to our own company. We heartily recommend this procedure.

As a criterion to determine whether a heliport is economically justified, we use a rule of thumb of 100 passengers generated per day. That is, we believe a heliport should be assured of boarding a minimum of 100 passengers per day within an 18 month period to be economically feasible.

DOWNTOWN SAN FRANCISCO HELIPORT

SFO Helicopter was forced to suspend service to downtown San Francisco as of December 31. We did so only after the San Francisco Port Authority engineers and our own representatives agreed that the landing pad adjacent to the Ferry Building would have to undergo major repairs or be completely rebuilt before it could be made available for further use. The actual pad was breaking on top and the underpinnings were rotten.

We were aware of the problem well in advance of the date that we were forced to suspend service. In an effort to obtain a new location, we surveyed the entire area for suitable sites. As a result of our investigation we concluded that, aside from locating the heliport on an available wharf which could be made structurally capable of handling helicopters with gross weight of 20,000 pounds, a possible location of the heliport, and a convenient point from which to serve the metropolis, would be the roof of the Trans-Bay Transit Terminal Building. The terminal is located on Mission Street between First and Fremont Streets, and, in our opinion, could be modified for helicopter use.

It appears to us that the modification would consist of the installation of an outside elevator or escalator, a boarding room on the roof and a landing pad on the roof. There would be no need to construct rest rooms, waiting rooms, or automobile parking areas, since all of these facilities are already provided.

We believe the building has one very substantial asset not found in other locations -- it is the hub about which the city's surface transportation system revolves. Commuter buses bring passengers from all sections of the metropolitan San Francisco-Oakland Bay Area into the terminal. Streetcar, taxi and limousine services are available to travelers from this point. It is within walking distance of the city's financial center and the principal office buildings of downtown San Francisco.

The Trans-Bay Transit Terminal is a public building, owned and operated by the State of California. It is my understanding that the terminal is under the jurisdiction of the Division of Bay Toll Crossings of the Department of Public Works.

In my comments regarding the Trans-Bay Transit Terminal, I do not intend to imply that it is the only site where an acceptable downtown heliport can be located. I can assure you that we are open minded on this subject, and are prepared to investigate any site which is economically suitable and operationally safe. If there is such a site, we would be more than willing to reinaugurate our service to downtown San Francisco.

Immediate steps must be taken to obtain a downtown heliport for San Francisco. There is a need for such a facility right now and there will be an even greater need in another year or so. I recently prepared and forwarded to Mr. Brown, manager of the Airport, a forecast of helicopter passengers that could be expected from a good location in downtown San Francisco. For your information, I have attached a copy of this forecast to my remarks here today.

A downtown heliport will require the expenditure of money. This must come from city, state or federal sources, or from a combination of the three, for to state the matter candidly, we, as the country's newest airline, cannot realistically think of assuming the additional financial burden of building such a facility to meet the needs of the country's fourth largest air terminal, and the nation's 12th largest city. To bring our service to the people of the San Francisco-Oakland Bay Area, we have already undertaken the very substantial responsibility of overcoming one of the primary obstacles of the expansion of scheduled helicopter transportation. That obstacle is the high cost of equipment. The current price for the ships we are operating, the ten-passenger ships, is approximately $320,000 apiece. By the time you get the spares, spare engine, spare parts, we have approximately a $400,000 investment for each of our four helicopters. We are contemplating taking delivery of a 28-passenger Sikorsky this year. That, without instruments for instrument flying, will cost $850,000. Without one cent of governmental subsidy, our company has purchased three ten-passenger ships, and we now have a fourth ship under a lease-purchase contract and intend to exercise our option within the next 60 days to acquire that one. We are the only scheduled helicopter carrier in the world to have assumed such a burden.

Again I must point out that the three other helicopter operators are subsidized. The only other helicopter operator in the world is Sabena, operating Sikorsky equipment and they are financed by the Belgium Government, owned by the Belgium Government. I would like to point out three things that in the future, we see the helicopter developing in three steps. One is what we are doing now, which will be expanded to what we call airline connecting service. This service consists of passengers to and from the airports, checking their baggage through. We intend to expand this service within the next three, four, five months to Palo Alto-Sunnyvale and as we develop in the next year or two, we hope to expand our service to downtown Sacramento. We think that this gets into our second type of service which we call inter-city service and we think that within two years, maybe sooner, the large 28-passenger ship we will be developing service to Stockton, San Jose, Santa Rosa, Monterey and many others. For example, a helicopter, 28-passenger helicopter, getting on the Trans-Bay Terminal here, going one block to the Capitol in downtown Sacramento would be a twenty-five minute flight and we think there is a tremendous mark similar to the shuttle services being operated now in the East between New York and Washington. We think of our helicopter service operating every hour between Sacramento and downtown San Francisco and Oakland could generate right off, approximately 500 passengers a day.

CHAIRMAN CARRELL: On your proposed twenty-five minute service to Sacramento, what's the comparative cost between that and a bus?

MR. BAGAN: We feel that with the 28-passenger helicopter we have to get a fare of approximately $12.50. We have found that we can charge a little more for helicopter service. We admit that this

stage of the development is a premium service and what we are selling is time and convenience. If we had a helicopter service here and you could get off, walk two or three blocks, get on the helicopter and be downtown, that's worth a little more than paying $7.50 and going to the airport. Because if you go to the airport, first you've got to ride out to the airport, then park, then walk another half mile, then check in, then walk out to your concourse, another half mile. Then you get in your airplane and taxi out and wait your turn, take off and get in the flight pattern and turn around and head for Sacramento and at Sacramento you get clearance and get in the flight pattern, come in, taxi into the terminal, walk into the building, wait for your baggage, and then you're still not at your destination. We think it takes a helicopter or a vertical lift type airplane to tap this market.

The airlines have captured the long haul market. But by far the largest travel market in the world is the 100-mile and under; and this, the airlines haven't touched yet. They haven't touched it because it would be very difficult with the fixed wing. But the helicopter is going to capture this market and I think you will see in three, four, five years you'll see us carrying 5,000 passengers a day.

CHAIRMAN CARRELL: It will be possible to reduce costs?

MR. BAGAN: Yes. I think that as the volume gets up, there will be reduced costs. If someone had come before your committee here, say five years ago and told you there would be 5,000 passengers a day between Los Angeles and San Francisco going by airline, you would think the man was a day dreamer. But it exceeds that now and I think the same with ours. We have got to have some people with a

little vision and foresight to see this and I think that a good heliport in downtown San Francisco will be carrying easily 60,000 passengers a month.

I believe that you will conclude, as we have, that the selection of a proper site, and the construction of appropriate landing and passenger facilities is a matter of some urgency.

I believe with the right location this forecast is very conservative. It's the same formula that has been used in other forecasting which has proved correct. With a good location in downtown San Francisco, I believe our first year, we could generate around 4,500 passengers a month. The Bay Shore Freeway right now is being over-taxed, over-burdened. In fact, I would say in two years from now, if you have to catch an airplane from the San Francisco International Airport between four and six-thirty or seven at night, it is going to be very difficult to do it and if there happens to be an accident, I doubt if you will catch your plane.

In my opinion, the public agencies involved should now assume their responsibility, and demonstrate the needed vision to bring into being this facility which is a necessary adjunct to the transportation system of this great city and of the entire Bay Area.

FUTURE COMMERCIAL HELICOPTER TRANSPORTATION

So much for the past, what of the future in commercial helicopter transportation? Where do we go from here? What might be expected in the next year, in the next five years or in a decade?

Our company hopes to stay with ground level heliport facilities as long as possible. We realize, however, that we must look to the future, and that land in the area in which we operate, as it is in cities across the country, is becoming more and more expensive. As a result, it is becoming less available for heliport usage. One answer to this problem may be the construction of major transportation centers in the large metropolitan areas. We have suggested on several occasions that municipal planners direct their attention to combined terminal facilities for rapid transit vehicles, buses, taxis and the like, with a roof landing area available for use by helicopters. Such a facility might be supported by a combination of municipal, state and federal funds.

A second answer to the problem of land scarcity on a much more modest plane, is the use of roof facilities upon city parking garages such as are becoming more and more common in metropolitan areas. Downtown garages are usually constructed in the more congested sections of the cities, where parking space is otherwise unavailable. Buildings of this type, which are stress designed, provide an excellent base for a roof top heliport.

A metropolitan helicopter service logically develops in three steps: Airline connecting service, Inter-city services, and Commuter service.

Airline Connecting Service:

This service consists primarily of the transportation of passengers, mail and cargo between outlying cities and terminal airports for direct connections to and from all airline points throughout the world. This system is descriptive of our present service in the San Francisco Area.

We intend, at appropriate times, to expand our airline connecting service to San Jose, Sunnyvale and Palo Alto.

Future planning demands that consideration be given to the appropriate size of flight equipment to be used. As I have noted, we currently operate four ten-passenger ships. We expect to be using equipment of this size for several years to come. We are also considering the acquisition of 25 to 30 passenger aircraft. As our traffic grows, we believe that sound business practice will require a mixed fleet of ten passenger helicopter and larger equipment. For certain route segments and for certain times of the day, the smaller equipment will suffice.

Looking further into the future of airline connecting service, helicopter visionaries foresee comfortably outfitted pods, loaded with passengers and luggage, picked up in the heart of a city by crane helicopters and delivered to the end of a runway and a waiting long-distance jet airliner into which they will be transferred. At the airport of destination, the procedures are reversed. The result: faster, more comfortable travel from the heart of one city to the heart of another.

Inter-City Service:

Inter-city service is the next step in an expansion program. This service is keyed to the city-center to city-center type of traffic. It will be logically initiated to such cities as San Jose, Stockton, Sacramento, Santa Rosa, Monterey and others. Businessmen will be able to board a helicopter in downtown San Francisco and arrive at a downtown Sacramento heliport within 25 minutes. I previously mentioned it is the market of travelers within the one-hundred mile radius that offers the greatest potential for air transportation. SFO Helicopter has every intention to develop this market aggressively.

The coming 100-passenger rotary-wing transport will meet all of the prime requisites of good inter-city travel. It will have sufficient capacity and speed to provide inter-city transportation at a minimum expense; it will provide faster inter-city travel in all distances up to 300 miles than can be accomplished by the fastest jet aircraft for the latter requires frustrating ground travel at each end of the flight; and, its ability to take off and land at a relatively small, centrally-located heliport means the convenience of air travel will be brought directly to the passenger, rather than bringing the passenger to the airplane.

Commuter Service:

The third function of the helicopter airline in a metropolitan area is the daily mass-movement type of service -- or commuter service. This is, of course, mass transportation of passengers from suburbia into the heart of the metropolis in the morning and back at the end of the day.

Congestion is growing worse. It is a paradox that the construction of freeways into newly developed areas causes industry and housing to move into these areas, and the result is more congestion on the freeways. Natural barriers and the extremely high cost of construction preclude a rapid transit system from fanning out to the many suburban areas. In many instances, there is only one answer -- take to the air and leap over this traffic congestion.

In the morning, the time of the daily commuting rush into the city, a big crane helicopter fitted with a streamlined "people pod" will pick up a load of passengers and speed them into the heart of the metropolis. In minutes the trip will be completed. Gone will be the bumper-to-bumper traffic jams and the tedious train and bus treks of former years.

Its morning job done, the helicopter will drop into a marshalling area, similar to the trainyard or bus depot of an earlier era. There the pod will be detached and the Skycrane will take off for a busy day of earning its keep. Scheduled for the balance of the morning may be the carrying of cargo from a nearby factory for delivery directly into the hold of a freighter at anchor miles down the harbor. The afternoon's schedule may call for the hauling of pre-fabricated houses to a new development on a hill near Santa Cruz. Later, the "people pod" will return to the city for the late afternoon commuter rush home.

The 28-passenger helicopters now in commercial airline service can generate 1,500 commuters daily. The S-64 Skycrane, which is presently flying in its final test program, can generate 5,000 commuter seats daily. A fleet of 20 Skycrane helicopters adapted with 100-seat passenger pods could offer 100,000 commuter seats daily for sale in this congested area.

Certainly our company recognizes that no one form of transportation will meet all the needs of the traveling public. On the contrary, in planning a sound transportation system for the Bay Area,

the public interest requires careful consideration and study to integrate all forms of transportation.

The trend of the population is to the outlying areas. During the next decade, experts predict the growth in the outlying suburban areas will be phenomenal. This expansion into suburbia poses a challenge for all transportation experts.

FEDERAL SUBSIDY

In closing, I want to say a few words about subsidy. (An opportunity to discuss the subject of subsidy with a legislative committee such as this does not present itself often, and I don't want it to slip by without at least brief mention). Let me state at the outset, SFO Helicopter has no axe to grind against Los Angeles Airways, New York Airways or Chicago Helicopters, the certificated helicopter carriers that have received subsidy payments, even though these payments have amounted to many millions of dollars over the years -- and which now continue at the rate of $5,000,000 or more annually. From the financial reports we have seen, none of these carriers would be able to show a profit if it were not for the aid they have received in the form of subsidy funds.

CHAIRMAN CARRELL: In what form?

MR. BAGAN: Straight cash. Big check every month around $200,000.

I have, however, very strong feelings about the concentration of all subsidy payments upon the three certificated carriers -- payments which have continued over an extended period of time -- while every other operator or potential operator is denied the assistance of federal aid, or even the opportunity to become eligible for subsidy assistance upon the establishment of a proper case. Where is the justification of this discrimination? Why should every city in the country be denied the opportunity to present its case for eligibility while money is poured into the operations at New York, Chicago and Los Angeles: Why shouldn't other areas of the country benefit in any way from these tax revenues? As one of the members of the United States Senate has pointed out, federal funds should be allocated to those areas where the smallest subsidy would reap the greatest public benefit. The way the program now operates, it is limited to three cities, and when any extra money is provided, it is put only in those places. An effort should be made to encourage operators in other sections of the country.

I am in complete agreement with the Senate Appropriations Committee in its report of August 27, 1962, on the Independent Offices Appropriations Bill. The Committee said:

> "The objective of the committee is to allow for opportunities to certificate carriers in a limited number of other areas, which the committee believes may better demonstrate to the Civil Aeronautics Board the value of helicopter service beyond the three experiments."

I will go further and state that the California delegation in Congress should make an effort to see that subsidy payments are allocated equally among the certificated carriers in this state. In my opinion, the continued award of substantial subsidy payments to the Los Angeles operation while we in San Francisco are denied even the opportunity to become eligible for subsidy assistance violates the basic principles of fair play. It would seem to be more in keeping with the purpose of subsidy aid if such payments as are currently coming to this state were allocated equally between Los Angeles and San Francisco. Subsidy should be given an area, not a carrier. We are operating without subsidy, but if we had some subsidy, we would then be able to bring scheduled helicopter service to communities which are not now receiving it. In this regard, it is interesting to note that more than one-half of the scheduled helicopter traffic in the southern California area is from the City of Los Angeles to an amusement park and recreation area.

Again, let me thank you for the opportunity to take part in this hearing, and for the privilege of appearing before you this afternoon. As you are well aware, I am very proud of our company. I am proud of the service we perform, and the convenience we can bring to so many people through the use of the helicopters. I hope that my remarks will be of some assistance to you in your considerations.

ASSEMBLYMAN CHAPEL: The real issue before the Committee is this heliport, is that not true, sir?

MR. BAGAN: That is correct.

ASSEMBLYMAN CHAPEL: Do we have structural engineers from any source here who can say it is feasible to beef up this old building to hold a 28-passenger Sikorsky or any other large vertical lift helicopter? Can it be done, what's it going to cost and who's going to pay for it? I think those questions are the issues, are they not, sir?

MR. BAGAN: I'll answer what I know. Engineers have made a study of this building; its structural characteristics. They have come up with the conclusion that this building with certain modifications would stand, the large 28-passenger helicopter. It's my understanding that the roof as it is now will take our present 10-passenger helicopters, with the decking up there now. With the

larger helicopters, the middle section of the roof would have to be taken off and would have to be beefed up. I understand this would cost approximately $300,000.

ASSEMBLYMAN FORAN: This building was constructed to carry very, very heavy trains up to the level of the roof.

ASSEMBLYMAN CHAPEL: Age has taken its toll on the building. Apparently your answer is that by using these 10-passenger vertical lift helicopters, it might do.

MR. BAGAN: It would take some decking which I understand would cost approximately $50 to 60 thousand.

ASSEMBLYMAN CHAPEL: But you do agree that we're going to have to have a whole building beefed up before they carry that larger support.

MR. BAGAN: That is correct.

ASSEMBLYMAN WARREN: It seems to me that in transportation, at least the commercial airliners would be extremely interested in speeding up the service of their passengers from the airport to the downtown destinations. To what extent, if any, have commercial airlines participated in the formation of helicopter companies or undertaken to provide helicopter services to their passengers once they have reached the airport?

MR. BAGAN: The airlines are starting to recognize one of the biggest problems is getting the private party from the airport to their destination. For example, in this area, you can fly to San Francisco and to Los Angeles in less than an hour but it might take you two hours to get to the San Francisco airport. However, the airlines generally have been very, very reluctant to ever get into

providing what they call ground transportation. They feel that once they ever make steps in that direction, that they're opening Pandora's Box and there's no end to it, that they will start to have to provide ground transportation to all their passengers, whether it be by helicopter, limousine, taxi, so forth. So they have been very reluctant.

The only possible way I know of any airline ever being interested in any way with helicopter airline is where they enter into a joint fare arrangement. Most of these joint fares are only permissible where they involve another city, not the city actually served by the airport. So, we have joint fares with most of the airlines to Marin County, to Berkeley, to Oakland, and so forth. We only have a few joint fare arrangements with airlines to downtown San Francisco because in the opinion of the airlines, the San Francisco airport serves downtown San Francisco. As far as an airline acquiring an interest in a helicopter service, at the present time it would be illegal without prior approval of the Civil Aeronautics Board.

CHAIRMAN CARRELL: You can actually save a lot of time for the person who is coming to San Francisco if you did have joint fares and landed them in the heart of the city.

MR. BAGAN: I think with the right location and running a large limousine to the five or six major hotels about every half hour right to my heliport with a $5 fare, I could start ordering equipment. I don't think I could get equipment in here fast enough.

ASSEMBLYMAN CHAPEL: You'll have trouble with that cab company that has a monopoly.

MR. BAGAN: It wouldn't bother me. I think that I'm entitled to provide a service to my passengers.

CHAIRMAN CARRELL: That's a little cheaper probably than a taxi.

MR. BAGAN: Our fare right now at $7.50 is cheaper than the cab. Here's a photograph of our Berkeley heliport that was constructed by the city of Berkeley. This is a new modernistic building, 200' x 200'. It's like a small airline terminal. There were 25 parking places when they constructed it but we ran out of parking places so they've provided more. The downtown Oakland heliport has parking facilities for many cars in the multi-level garage with a high-speed elevator right to the roof with the glassed-in reception room and heliport. I think it is probably one of the outstanding heliports in the world.

CHAIRMAN CARRELL: Would you prophesy that this is the type of thing that might be in the future the most practical with the garage and parking facilities all together?

MR. BAGAN: Yes.

CHAIRMAN CARRELL: Do you have any problem landing among tall buildings?

MR. BAGAN: We have to have an emergency area going in and out.

CHAIRMAN CARRELL: You have zoning problems just like the airports.

MR. BAGAN: Just as much, if not more.

ASSEMBLYMAN WARREN: What have you done to explore the possibility of working out some relationship with the hotel industry in San Francisco for heliports?

MR. BAGAN: There are several heliports located at hotels in downtown Los Angeles area constructed and are operated by an air taxi operator with a small single bell, a two or three seater. The safety requirements for that type of operation are completely different from our operation. We could not operate in and out of these

areas as a scheduled carrier. We have to have a clear area that we could make an emergency landing at all times in case we ever have an emergency.

ASSEMBLYMAN WARREN: Roof tops cannot be used for heliports?

MR. BAGAN: Roof tops can be used for heliports if they have an area that you could make an emergency landing going to and from the heliport.

ASSEMBLYMAN WARREN: What does it take for a roof top to have this emergency landing area?

MR. BAGAN: It should have some parking lots or some open areas around the heliport. All the hotels would very much like to have a heliport and have our traffic coming in and out of the hotel. When we first came to town, they all expressed an interest. From an operational point of view, it's just not feasible. Los Angeles Airways has no heliport in the downtown area, or on any hotel.

The helicopter is a very safe airplane, but one of the safety features of the helicopter is the ability to auto-rotate. In case of emergency, the pilot can change the pitch on the blades and then without engine, without power or anything, he can make an emergency landing. Using a four to one ratio, if he's a thousand feet in the air, he can pick out any spot within 4,000 feet to make an emergency landing area. With a single engine, you always have the possibility of engine malfunction or power failure. We've had it since we've been here. An emergency landing area is required under the F.A.A. rules and regulations. Our pilot knows every minute he's in the air in case of emergency where he's going to put that helicopter. Going in and out of the city he still must have a route that he'll know every second when he has an emergency where he will put it. He may

not have one, maybe once in five years, but if he does, he wants to know where he can put the helicopter. We think they're tough rules and regulations, but we think they're sound. 95 to 98 percent of our flying is over the Bay and our ships are amphibious. There have been several suggestions for city garages in downtown San Francisco. Similar to the hotels, the problem is there is not a route in and out of the areas. There is also a noise problem and you cannot take the helicopter down among the hotels and office buildings at 5:30 in the morning. We have to be practical in the location of the heliport and with the transbay terminal, I don't think there's any problem.

CAPTAIN SIDNEY S. SHERBY, HILLER AIRCRAFT COMPANY:

I'd like to compliment Mr. Bagan on the quality and content of his remarks which I think were very good, and which I think we wholly substantiate. The comments that I will present are of a general nature from the manufacturer's point of view. As manufacturers we are vitally interested in seeing the use of civilian aircraft advanced in connection with the services of all type essential to the functions and growth of our communities.

The bulk of the comments presented in this report will refer to Vertical Take-Off and Landing Aircraft (VTOL) since that is the primary field of the Hiller Aircraft Company. However, it is not possible to completely separate all types and some observations will be made concerning the fixed-wing ordinary conventional-type of aircraft.

In the years since World War II, numerous studies have been made concerning the requirements for airways and airports to service civil as well as the military traffic. It became apparent early that for normal peacetime uses, a common airways traffic control system was necessary. (May we refer to the controversy of TACAN versus VOR-DME that raged in the mid-50's with the final VORTAC compromise.) The helicopter made its appearance in the latter part of World War II, and, I believe, one of the first studies of heliports and helicopter routes was made for the Yellow Cab Company of Cleveland, Ohio, in 1947 or '48 when they filed to start a helicopter taxi service for the greater Cleveland area. This effort was aborted for lack of suitable machines (the S-51, which was the largest available at that time, was not economically feasible). It was many years

later, in May 1955, when Los Angeles Airways started passenger operations using the Sikorsky S-55 helicopter, another military derivative. The large pressurized four-engine, piston powered transports made their appearance in the late 40's and early 50's. These derived largely from World War II transport and bomber technology. The jet transport that arrived in 1959 derived from the large military jet bomber and transport developments. Radar and VHF and UHF communications - all military developments - did much to alter the traffic control procedures. Each of these items in their turn raised new problems which necessitated new studies to examine and recommend programs to cope with them and to plan for the future growth. It is of interest to note that these studies predicted only growth of that which had arrived; they never predicted the new things that arrived in the time span they were supposed to cover. Essentially, such studies were started in reaction to a new situation. The history of the old CAA is almost entirely one of reaction. It has only been since the establishment of the FAA with a new charter that any real effort to "look ahead" has been evident.

The foregoing had had the principal aim of calling attention to the true nature of the development of the aviation business. If the nature of the development is understood, then planning to cope with the future growth becomes more meaningful and realistic. The aviation business, dollarwise from a production standpoint, is about 85% devoted to military production. Research and development leading to advanced aircraft is almost entirely government funded, including NASA and FAA efforts. There is a small amount of industrial proprietary research and development, but this is usually carried only to the stage where government financing can be interested and obtained to complete the work. The aircraft industry can be considered captive to the Department of Defense, with civilian aviation highly dependent upon it for growth and existence. This is a peculiar paradox for, in numbers, civilian aircraft far outnumber the total military. However, the majority of civil aircraft are small, low performance types and dollarwise represent a small portion of the national inventory.

A recommendation is that in deriving requirements for future airport and airways planning, military, NASA and FAA R&D programs should be monitored to gain a real appreciation of things to come. This will assist in making planning meaningful, and not merely a reaction to a situation not fully anticipated. Further in these remarks, short descriptions of several new developments in the VTOL aircraft program will be given as matters of interest.

In the introductory remarks, mention was made of numerous studies conducted in the last five to ten years. Your attention is invited to three in particular. These reports deal with helicopter operations and heliport design and location including technical, operational and civil factors. These are:

1) "Planning for Urban Heliports," by Horonjeff and Lapin, University of California, Institute of Transportation and Traffic Engineering; Research Report No. 19, June

1954. This is a well-done study with an excellent bibliography. The physical criteria derived are basically sound and need only adjustment for size.

2) "Heliport Location and Design," by the Aviation Depart-Port of New York Authority, May 1955.
This report covers much of the same ground as 1) above, but has more emphasis on operational requirements.

3) Report from the Helicopter Council, Aircraft (now Aerospace) Industries Association entitled, "Helicopters in the Air Traffic Control System, 1957-1965," prepared for the Honorable Edward P. Curtis, Special Assistant to the President, March 29, 1957.
This report deals with predicted growth of helicopter operations and air traffic control requirements. It correctly calls attention to the basic differences of helicopters from fixed-wing aircraft and the incompatibilities in traffic control requirements. The two do not mix.

One important factor stands out. The growth of commercial helicopter operation has been but a small fraction of that predicted, particularly by the AIA Report, 3) above. Several factors are responsible.

1) The helicopters themselves have not matured and developed as rapidly as envisioned. The Air Force largely ceased its efforts in this field and the other services did not push development of machines of the sizes to be economically attractive. Costs were high.

2) Schedules of the operating helicopter airlines were unreliable, seats limited, and IFR operation was not feasible.

3) Lack of multi-engine reliability prevented operation from convenient urban heliports. FAA and city regulations restricted operation to carefully defined routes.

4) Public hostility to intra-urban operation is strong - due probably to noise, fear, and lack of personal participation.

Industrial use of the helicopter has grown tremendously. However, after all these years, there are still only four small helicopter airlines and these still require subsidy, government or private, to survive. The City of San Francisco has placed severe operating restrictions on helicopters. There is now but one downtown heliport. San Francisco International Airport has all but banned the private or executive helicopter from the main terminal area. In 1962, the City of Palo Alto, in response to complaints, caused a cessation of helicopter operations at a large outlying motel during the annual convention of the Helicopter Association of America. Palo Alto has recently passed a most restrictive helicopter operation ordinance. The City of Chicago has passed a restrictive

ordinance which makes it virtually impossible for an industrial helicopter to operate within the city limits.

Today, there are more satisfactory machines becoming available, including multi-engine types. It seems necessary, then, to educate the public to accept these machines as important factors in the transportation aspects of the overall economic growth of the country. The State government could do much to lead by setting standards and examples for the municipalities to follow.

In this regard, it is desired to emphasize one factor. The moving of air to develop lift and the burning of fuel to provide power are inevitably associated with noise. The weight penalties and power losses associated with muffling of engine noise can render an aircraft economically worthless. Even when a reasonable level of improvement is made on engine noise (as in the case of the turbine engine), rotors and propellers have characteristic noises of their own. There has been little or no research in the field of rotor or propeller noise reduction. It may be that education and familiarity may at some time bring acceptance. It is noted that the railroad, that runs through the middle of nearly every community, has long since ceased to be a noise nuisance even though its sound level is every bit as high as that of the newer machine. I call attention to the thousands of people living along the Southern Pacific tracks between San Jose and San Francisco.

The County of Los Angeles deserves special credit. It is an almost singular case where intelligent foresight and planning, keyed to a rapid area and population growth, have fostered helicopter transportation with public acceptance, a good route structure and numerous heliports.

At this instant, the helicopter is the only operational VTOL aircraft type in either military or civilian use. It has limited range and speed. Foreseeable improvements may double present capabilities within the next five to ten years. Very large helicopters, with payload capabilities up to 20,000 to 40,000 pounds, are a definite attainment and are in the design stages of development. These will be multi-engine machines with attendant reliability.

Two other types of VTOL machines are in the development stages by various government agencies and may some day be in commercial service.

The first type is the hybrid such as the tilt-wing propelloplane. Several prototypes have been successfully flown. One large transport type is presently under construction and is scheduled to fly in the late summer of 1964. If successful, this machine has a definite place in the commercial picture. Block speeds of 300 mph and stage ranges of 500 miles with 40 to 50 passengers are technically and economically feasible. All-weather flight capability is a basic design feature. Such an aircraft can and must use the same en route flight control systems as present and future fixed-wing aircraft. They can use any existing airport. However, they will require only the same ground area as a large helicopter and are not tied to large expensive parcels of improved real estate. At this time, we cannot

predict landing approach techniques. Several are possible. Operational tests on the current development aircraft will supply us with glide slopes, approach clearance criteria and the like. These data should be available in about two years. Take-offs should be straight forward and similar to helicopters. These are multi-engine aircraft and have the attendant reliability. Compared to the helicopter, this type of aircraft has limited hover time. It is essential for their operation under high density visual traffic or instrument flight conditions to have positive, accurate air traffic control at the landing terminal. It is estimated that if the present program is successful (and we have every reason to believe it will be) such aircraft could be available for commercial use in about five years.

The second new type is the jet-lifted VTOL. These machines are basically high performance fixed-wing jet aircraft which are fitted either with special jet engines pointing vertically downward or deflect the thrust of the primary jet engines to give hover and VTOL characteristics. These aircraft will have all of the en route operating characteristics of our present day jet aircraft. In the VTOL mode, they will be similar in all respects to the tilt-wing type discussed above, but will be even more critical and restricted in hover time available. Positive landing traffic control is an absolute essential under all conditions. An optimistic estimate is that at least ten years will pass before these types appear on the commercial scene. It could be longer.

The Hiller Aircraft Company currently is working on four new developments in the VTOL field which may have an important impact on future civil aviation.

The first is a growth version of OH-5A Light Observation Helicopter currently being developed for the U. S. Army. This helicopter will be a very high performance four-place executive type with twin engines and ultimately capable of about 200 knot top speed with a usable block speed of about 150 knots. It will weigh about 3000 pounds and will have a rotor diameter of 35 feet. It will have multi-engine reliability and find all-weather flight capabilities. Availability will be in about 1967.

The second is a joint venture with Ling-Temco-Vought Corporation and Ryan Aeronautical Company. This is the XC-142A Transport for the U. S. Air Force. This is the tilt-wing aircraft described previously. Hiller is developing the entire propulsion drive system for the airplane. The aircraft will weigh about 40,000 pounds and will be about as large as the Convair 440 airplane. Possible civilian availability could be in 1969 or 1970.

The third is what could be the world's largest helicopter in its final development. Hiller is currently engaged in first phase design work, together with Continental Aviation Engineering Corporation, who will make the engine, of a very large rotor system employing jet engines at the tips of the blades for propulsion. In its first operational form, the helicopter would have a rotor diameter of about 130 feet, weigh about 80,000 pounds and have a payload of about 40,000 pounds.

It will have multi-engine reliability. It will have a relatively high cruise speed, in excess of 100 knots, dependent on the type of fuselage or pod employed. It is essentially a crane or heavy lift machine. It could be effectively used for high density, short haul transportation. Current plans could yield flyable prototypes in another three years. Civilian availability could follow in another four years or in about 1970.

The fourth is a joint military-Hiller development of a radically different jet engine to provide vertical thrust for VTOL aircraft. This is still in the research stage. There are a number of years of development ahead. Successful application to civilian aircraft could be as soon as six years or as long as ten.

It is the considered opinion of Stanley Hiller, Jr., President of Hiller Aircraft Company, that at some time in the not-too-distant future, all airplanes will have a VTOL capability.

It is desired to present some considered opinions in closing. It is believed that the State should have a plan for airport and heliport construction and operation. The State should set the pace and establish permissive legislation to encourage the growth and acceptance of the use of aircraft, including VTOL types, in the urban environment. The expense of land acquisition, facility construction, operation and maintenance is such that if left to the municipalities no real progress will occur. State sponsorship also will ensure proper standards. It is believed that Federal support will follow initiation of a State program to relieve the financial burden to the State. Further in this vein, the commerce produced by such a program should increase the economic growth of the State.

It is the desire of Hiller Aircraft Company to assist the Committee in any way it may. If there are further considerations or specific technical matter the Committee desires additional material on, we shall be pleased to respond to the best of our capabilities.

MR. EMMETT SMITH, ASSISTANT GENERAL MANAGER OF BUSINESS ADMINISTRATION OF THE SAN FRANCISCO INTERNATIONAL AIRPORT:

The airport is municipally owned by the City and County of San Francisco and operated under the jurisdiction of its Public Utilities Commission pursuant to the City Charter.

For purposes of reference, I would like to preface this testimony by expressing a policy concerning the operation of the San Francisco International Airport which I would restate as follows:

The City and County of San Francisco supports an aviation program dedicated to economically sound development of an air transportation system to meet the present and future needs of civil aeronautics; further, the City supports a program to promote an extension of its airport facilities based on proof of ability to produce the traffic to support and adequately assure its financial success. It is therefore a prime objective that the Airport Department must have financial self-

sufficiency in operations and not look to the taxpayers of the community for subsidy or support.

This basic policy was established in June 1956 when the preliminary report on "Plans for Future Development of San Francisco International Airport" was presented to the citizens of San Francisco with a request to support a $25,000,000 general obligation bond issue.

In the invitation to testify at today's hearing, information was requested on five specific points.

1. Comments on the adequacy of existing heliports to serve the Bay Area air passengers and freight transportation needs.
The basic need for passenger helicopter service in the Bay Area is set by the natural geography of the area with particular reference to San Francisco Bay. The prime routes for helicopter service are those which offer a significant time savings when compared to surface transportation. For example, normal driving time between downtown Oakland and San Francisco International Airport is estimated as 50 minutes by the California Division of Highways. The Highway Division uses 55 minutes for Berkeley and 60 minutes for driving from either the Oakland Airport or Sunnyvale to San Francisco International Airport. Thus it is not surprising that in June of 1962 these four points accounted for 97% of all the helicopter passengers carried by SFO from San Francisco International Airport. The remaining 3% is, of course, the traffic to the San Francisco Downtown Heliport.

   Again, using September of 1962, we find that Oakland, the Oakland Airport, and Berkeley (service having discontinued at Sunnyvale) account for more than 96% of the total with the San Francisco Downtown Heliport representing about 3½%. The heliports existing today have demonstrated that they are capable of serving up to 97% of the helicopter traffic at San Francisco International Airport. We believe that service should be available to an area whenever significant time savings can be economically achieved.

2. The need for additional physical facilities.
Additional heliports should be provided wherever there is economic justification. At present there is no heliport in downtown San Francisco suitable for use by a certificated helicopter operator. For service to San Francisco it is necessary to have a heliport in the downtown area.

3. Any special maintenance or public access problems on existing facilities.
The only access problem insofar as San Francisco International Airport is concerned was one of moving helicopter passengers from the present helicopter landing area at the main terminal to the South Terminal. To aid this movement permission was granted for the operation of a small bus by San Francisco Oakland Helicopter.

4. Suggested location for downtown San Francisco Heliport and possible methods of financing necessary construction work. The site appearing most suitable is the East Bay Terminal located at Second and Fremont Streets.

   Studies indicate that a heliport could be developed on the roof of that building at a cost in the range of $300,000 to $350,000.

   Whoever makes this capital investment should do so with assurance of recoupment.

5. A description of any restriction placed by your airport on private or executive helicopter operations at the field or near the main terminal building, including a background of reasons for any such restrictions.

   a. Any helicopter type aircraft has the right to use the helicopter pad located across the apron from the terminal.

   b. We do not permit the disembarking of passengers there due to the danger from other aircraft moving on the apron.

   c. The "Gate Position" section of the Basic Policy Manual of SFIA reads as follows:

      "All single engine aircraft operations (and that does not apply only to helicopters) shall be conducted from Executive Aircraft Terminal."

      "Upon request, non-air carrier twin engine or large aircraft, may be permitted in Terminal area for loading or unloading, preferably on west side of Concourse B, provided pilot remains with aircraft."

      This is based on the experience of the Airport that single engined aircraft are normally small and very subject to hazard from propeller wash or jet blast in and around the tight gate position areas of the terminal. We believe this to be especially true of helicopters.

      It is also based on the fact that gate positions are in great demand and that experience has proven that pilots of smaller aircraft in many cases, have left the aircraft parked for several hours.

      Helicopters may and do operate from the Executive Aircraft Terminal Building.

   d. In the event that arrangements are made in advance with gate position tenants, and the Tower and Airport Operations are notified, corporate aircraft are permitted to park for 20 minutes at an airline gate position.

A new downtown heliport in San Francisco should be open to all users through arrangement with the operator.

ASSEMBLYMAN WARREN: In listening to your statement, it seems to me there were some rather obvious and glaring holes in it, to this extent: your first comment was that the basic need for faster helicopter service was set by the natural geography, etc. You made no reference as to the travel time estimated between the San Francisco International Airport and downtown San Francisco. What would that be - about 25 or 30 minutes?

MR. SMITH: The Division of Highways uses 30 minutes.

ASSEMBLYMAN WARREN: You also indicated that additional heliports should be provided wherever there is an economic justification. Inasmuch as the 30 minute travel time is indicated on surface carriers, do you feel that there is at present an economic justification for a San Francisco pad to be used by commercial helicopters?

MR. SMITH: The economic justification would be proven by the generation of passenger traffic that would use such a heliport.

ASSEMBLYMAN WARREN: Is it a fact that experience has indicated only three percent of the SFO's passengers go to downtown San Francisco? Do you feel that this committee should draw any conclusions from that figure?

MR. SMITH: Well, those are the figures for the downtown heliport. It was in existence for 31 months - during that 31-month period it accommodated a total of over 12,000 passengers.

ASSEMBLYMAN WARREN: Would the amount per day number of passengers in your opinion afford sufficient economic justification for a capital improvement venture of $300,000, which is the cost estimate here?

MR. SMITH: It would if the pay-out were assured.

ASSEMBLYMAN WARREN: What do you mean by that?

MR. SMITH: If the pay-out is to be based on a figure per passenger, then the figure per passenger must be set to pay out the capital investment.

ASSEMBLYMAN WARREN: What would the pay-out figure be?

MR. SMITH: I have not computed that. The figure that now applies at heliports and did apply at the Ferry Building heliport was 25¢ per passenger. The Ferry Building heliport received an investment by the City of San Francisco of $20,000. In the 31 months it was in operation, the city recouped $4,832.

CHAIRMAN CARRELL: Did the City operate this heliport?

MR. SMITH: The heliport was leased by the City from the State Harbor Authority and actually operated by San Francisco Oakland Helicopter Company as a fixed base operation through a contractual arrangement with the city of San Francisco.

ASSEMBLYMAN FORAN: The heliport facility that was located at the San Francisco Ferry Building was in an area that might be described as possibly socially undesirable, because it's a waterfront section of the city. It's an area that women and certainly children, don't like to frequent unless they have some type of police protection, and this is one of the reasons why the effort is being made to find a location that would be more socially acceptable and that would be utilized by downtown businessmen and people in this field. I think the projections that were submitted by Mr. Bagan, if a facility were constructed in a desirable location are quite well thought out, and I think that they could be established after a period of time, and

the recoupment to the city or the state as the case may be would be quite feasible.

MR. BAGAN: I think Mr. Smith's testimony is very unfair. I think it gives the wrong picture and the wrong implications. We knew when we first went into this heliport that it'd be a temporary site. We started to try to generate traffic out of there. We found that we couldn't get taxicabs down there even to take care of our passengers when they came in and out. So we decided we shouldn't even try to promote the service too much, we couldn't even take care of our passengers when we got them. We more or less stayed there at that location pending our receipt of permanent certification. The city and county strongly supported our permanent certification, and I assumed that they would provide a facility which they stated during their hearing. I believe they have a moral obligation to stand up and provide a facility, the same as they had under airports. The testimony of three percent is very unfair. We have made a forecast of traffic that can be generated with the right facilities. I challenge him to point out where the forecast is wrong.

MR. SMITH: I said the total amount of passengers for that period at the Ferry Building Heliport was 12,488. The three percent is the figure of all the helicopter passengers at the San Francisco International Airport. 97 percent went to points other than downtown San Francisco heliport. There very well could have been other passengers included in the 12,000 total that went from the Ferry Building to points other than San Francisco International.

ASSEMBLYMAN FORAN: Did you see the projections that were submitted with the testimony of Mr. Bagan?

MR. SMITH: I have seen them.

ASSEMBLYMAN FORAN: Has the San Francisco Municipal Airport examined these projections, or analyzed them in any way?

MR. SMITH: We have checked them against certain other projections.

ASSEMBLYMAN FORAN: And conclusions?

MR. SMITH: Well, the forecast of San Francisco Oakland Helicopter Company specifically with reference to the forecast of enplaned passengers in San Francisco International Airport is much higher than a report that was provided at the airport by a consultant in July of 1962, and it's higher than the forecast for the year 1970 by some 25 percent.

ASSEMBLYMAN FORAN: So that even if you take the 1970 figure of 59,000, in your estimation it would be at least 75 percent of that figure.

MR. SMITH: Our consultants in 1962 estimated that in 1970 the San Francisco Airport would have a total of 4,700,000 enplaned passengers.

ASSEMBLYMAN FORAN: Then if the projections are carried out with the SFO, that would reduce the 59,000 figure to approximately 44 or 45,000 passengers?

MR. SMITH: Yes, if you accept the penetration of the market.

ASSEMBLYMAN CHAPEL: I buy Yellow Cab tickets by the book, in Los Angeles. I come to your airport, I can't get in with those tickets. There's a monopoly out here and the Yellow doesn't have it. A Yellow Cab driver risking life, health and limb if he goes out there and tries to pick up a passenger.

MR. SMITH: The use of aeronautical facilities in San Francisco International Airport comes under the provisions of the Federal Airport Aid Act which contains a non-discrimination clause.

ASSEMBLYMAN CHAPEL: I'm not talking about race now or nationality, but about helicopter service between the airports and downtown.

MR. SMITH: You're right in your remarks. It also contains a clause that the airport shall not grant an exclusive right for use of the airfield. The present taxicab contract expires in August of this year and after its expiration the new arrangement may remedy the problem.

ASSEMBLYMAN CHAPEL: You mean there'll be two or more cab companies allowed to haul me back and forth?

MR. SMITH: There very well may be another type of arrangement.

ASSEMBLYMAN CHAPEL: Well, I don't think it answers the question, but I'll let it drop.

ASSEMBLYMAN DONOVAN: Approximately what percentage of the passenger traffic into San Francisco airport is bound for the downtown or metropolitan area of San Francisco?

MR. SMITH: I would venture to say about 36 percent.

ASSEMBLYMAN FORAN: There was a brief submitted when Rick Helicopters applied for a service operation out of San Francisco and at that time the San Francisco International went on record as recognizing the need for helicopter service from its International Airport to surrounding communities of the Bay Area and to downtown San Francisco.

MR. T. F. BAGSHAW, ASSISTANT DIRECTOR OF PUBLIC WORKS: One of my special assignments has been liaison between the state department in Sacramento and the Division of Bay Toll Crossings, which is the division that is concerned with this terminal building. On November 7th of last year Mr. Foran arranged a meeting down in our district office. We discussed this proposal very thoroughly and came to the conclusion at that meeting that the first thing that should

be done was to have an engineering study made as to the feasibility of using this route for this purpose of determining how long it would take, and how much it would cost. We met again on December 12th with the same people present and the purpose of this meeting was for our people to present their findings. Their findings were, No. 1, that it was feasible to do certain reconstruction to make this suitable for the landing of the heavier helicopters, but it would cost $325,000 and would take from one to one and one-half years to accomplish the work after the work was authorized. These figures and these plans were checked by the technical staff of the Public Utilities Commission in San Francisco, and they have concurred that the plan is sound and that the estimates are reasonable. We had another meeting on January 7th here in San Francisco.

It boils down to this: The State would be interested in having this facility used for this purpose. We think it would bring prestige to the building, it's a part of transportation and we've been trying to develop this building as a transportation center. It would be of advantage to concessionaires in the building. We are certainly anxious to cooperate to the fullest in accomplishing this objective. There are two minor points that we have held in reservation for determination later if this goes forward. The state would want to be certain that if this is established, we wouldn't be creating a new problem in the question of noise and of safety. The question of necessity of subsidizing this became quite apparent, and, of course, the state at this time without further legislation is not in a position to act. As far as our leasing the building, this would take some legal study on the part of our department attorneys.

ASSEMBLYMAN DONOVAN: Really the only obstacle standing in the way of this development is the good old dollar sign that we have to worry about. In other words, where is the money going to come from, how is it going to be financed?

MR. BAGSHAW: The money could be developed, even at the State level, by action of the Legislature, but the problem is reimbursement. We have made improvements in the building for a restaurant purpose, and we made it only after we had a firm lease in hand paying in sufficient revenue to amortize the cost of making these improvements. Such reimbursement doesn't appear to be present, at least as far as we have gone now, in the case of the heliport on the roof.

ASSEMBLYMAN DONOVAN: In other words, you don't think that the projected passenger load would produce sufficient revenue to reimburse?

MR. BAGSHAW: We haven't gone into that. Our problem was, can you do it, how much will it cost, and how long will it take.

ASSEMBLYMAN DONOVAN: We were given some projections earlier, together with a suggestion of 25¢ per passenger. Wouldn't that money go into repaying this particular outlay? Have you seen those?

MR. BAGSHAW: No.

MR. BAGAN: The forecast was given to Mr. Brown, the airport manager, approximately three weeks ago. I was formerly with the CAB for many years. The type of forecasting done here is the method that they have used and it's quite accurate. The assistant manager said maybe we have overestimated that by 25%. This could be true; however, the airport themselves have underestimated their traffic for the past ten years, so I think it is a conservative forecast.

ASSEMBLYMAN FORAN: The nut of the question is the dollar sign, or how much is it going to cost and I think at the meetings that

we had there were two alternatives that were proposed. One, that the State should lease the roof of the East Bay terminal to the City and County of San Francisco for a nominal amount and the City and County of San Francisco would then undertake to spend funds, possibly from revenues from the International Airport, for the purpose of constructing a heliport facility on the roof of that building. In this case there would be no question of reimbursement to the State of California because there would be no expenditure by the State of California. The other alternative was that since the State is empowered to prepare the East Bay terminal facility for occupancy by tenants and is authorized to spend funds in this direction, although these funds have to be reimbursed, the State of California would construct the facility and would have to be reimbursed by the users and operators and utilizers of the heliport facility on the roof of the building. Those were the two alternatives, either the expenditure of State money, with reimbursement, or else the expenditure of City and County municipal airport money. In other words, an extension of San Francisco International Airport to a noncontiguous area, to wit the roof of the East Bay Terminal Building.

ASSEMBLYMAN DONOVAN: Is the City and County willing to go along with this?

ASSEMBLYMAN FORAN: The City and County is presently studying this. It's being presented to the Public Utilities Commission, there will probably be a recommendation go to the San Francisco Board of Supervisors, who will make a policy determination as to whether or not they will or will not construct the facility. The importance of developing this testimony before this committee is that one way or another, we will probably have to have some type of legislation, so that if and when I introduce a bill, you'll know what I'm talking

about.

MR. BAGSHAW: Mr. Chairman, I would like to say that in the discussions it has been clearly understood that if the heliport is built it will be available to all comers. Any operator would be permitted to use it.

ASSEMBLYMAN FORAN: The time element was mentioned as a year and a half for the construction of heliport facilities. The permanent pad is a structure of about 150 x 160 square feet. Then there are two approaches on either side, consisting simply of planking, which would accommodate these facilities and a temporary landing area could probably be put into operation in a much shorter period than one and a half years.

MR. BAGSHAW: Ninety days.

MR. CLYDE BARNETT, DIRECTOR OF AERONAUTICS: You have had considerable discussion about the volume that you might or might not expect from this particular heliport. In the experience of other cities up and down the nation, where they have provided a sufficiently large pad that other companies could use, the airline use of it becomes a very minor part of the facility. Mr. Bagan's operation, as it is presently going, and considering the marvelous job he has done without any subsidy, is going to expand rapidly, and is going to expand a tremendous number of commuter-type passengers to and who are bound for downtown San Francisco and are not the least concerned with the airport. Particularly where you have water surrounding a city, there will be a tremendous demand for these pads from other places, such as Hayward and so on, for fast service for people who are plain old commuting. The cost of this thing is coming down day by day and the technical ability of the machine itself is on the verge of many things. This thing is

evolving rather fast, and very likely we will have a tremendous growth in the use of this machine.

San Francisco has been delinquent in preparing for the future, that we certainly have not done an adequate planning job for this. We don't need one, we need six or seven in the downtown area. If we were to translate it in terms of a per capita basis of their needs and compare it to Los Angeles's present experience, which certainly has proven acceptance of the machine, we would already be building our fifth right now. We are way behind here, but it certainly is not something we should look at just as whether Mr. Bagan needs it or whether they need it for transportation to the airport or not, it's from other areas as well. The supersonic transport in all probability is going to create a whole new series of problems itself, which very well may be that we can't live with on some of our present metropolitan airports, which will necessitate helicopter lifts from maybe a greater distance away, in which case this will be your only funnel, your only way in.

San Francisco is way behind and it definitely needs to catch up. It needs others than just here. We do have the problem that as you come in to the downtown area, it is, on a ground-use basis, so heavily used up that open areas to safely autorotate in, on an access and egress basis to a heliport, is a problem. In the downtown Los Angeles area we have succeeded in getting four within about a seven square-block area and they're operating together very nicely. Our concern is that the public is being left. It's being done by private people for personal individual company use, and this uses up a gigantic air umbrella when we do this.

CHAIRMAN CARRELL: Would there be a traffic problem created?

MR. BARNETT: Oh no. I don't think that we have a traffic problem for many years, and when we do, I'm quite sure we will have other technical means of solving it. Most of us in aviation are not at all concerned about crowded air space. And we have an infinite number of levels up there. If we can handle nine million cars in California, using less than one-eighth of one percent of the real estate, we certainly ought to be able to figure out how to handle a handful of aircraft with an infinite number of levels and infinite number of widths to do it in. This is purely of communications and communications equipment. This is an electronic problem that will evolve as the need arises for it.

ASSEMBLYMAN DONOVAN: There isn't any problem with this particular location? You've got your ratios and your clearance?

MR. BARNETT: Excellent place of clearance. Also there is excellent access and egress to it. As far as we are concerned, we are satisfied. The FAA may not agree with me, but then they are a little more conservative than we are.

ASSEMBLYMAN FORAN: You would advocate the expenditure of State funds, perhaps even general funds or highway funds, for the construction of a facility, not only in this community but other communities.

MR. BARNETT: If you come to the Legislature with such a program, I'll support you 100%. I think there are some of these that are pretty critical and they are big problems, more than most of these counties can handle. They need long-range financing and long-term financing on a low rate basis and they need some help.

MR. E. R. FOLEY, CHIEF ENGINEER, DIVISION OF BAY TOLL CROSSINGS, STATE DEPARTMENT OF PUBLIC WORKS:

The terminal building is about 750 feet in length and the central area over the main waiting room provides a large enough space to construct the main pad, roughly 150 by 160 feet. From this in each direction would be built a lesser pad for temporary use by the smaller 'copters while the main pad is being constructed. These little outriggers to the central pad, being about 75 feet in width, would act as a safety measure and emergency landing area for the copters from then on when they went to the big machines. This could be done for roughly $325,000.

MR. BARNETT: Right now we have records of 20 heliports around the Bay that would be contributing traffic to this. Mr. Bagan is planning on expanding his service to some of those other areas to bring people in here as well as to the San Francisco airport. I think this is going to be a very successful thing eventually but nobody can plot it for you. We can't come up with any crystal ball figures because there's no experience to base it on anywhere in the country that is very close, exact replica situation. The terrain, the geography, the temperament of the people, everything is different in the situation.

MR. CHARLES FRANKEL, PRESIDENT OF COMMODORE HELICOPTERS:

We operate from the Commodore heliport in Mill Valley, about ten minutes from downtown San Francisco by helicopter. Commodore Helicopters is one of three Bay Area dealers for Hughes Helicopters, manufacturer of light helicopters. Commodore Helicopters is also a recognized certificated air taxi service. We offer instruction and perform such public services as fire patrol, transporting fire

fighters in to fires, line patrol for Pacific Gas and Electric, and traffic reports daily. I feel very strongly that as cars need roads and trains need tracks and airplanes need airports, a helicopter is absolutely useless without a heliport. We are in a sense restricting the public by not having available heliports, for they cannot take advantage of what is in my opinion the most agile and adaptable vehicle available today.

There are several types of helicopter owners. First, there is the public transportation use of helicopters. SFO and ourselves represent a source of public transportation. SFO Helicopters use a larger helicopter seating, we hope in the future, up to 28 people. We are an air taxi operator. We are able to handle two people or one person depending upon which of the vehicles is available. In other words, we use two and three-passenger helicopters. Secondly, there is private transportation for an individual or a group of individuals who want to go to a specific place and own their own helicopters, the corporate helicopter, or perhaps an agricultural operator. Define it as a private individual who owns his helicopter. But no one of these classes of helicopter owners can operate without a heliport. In San Francisco, there is at the present time no place to land.

As a dealer for a light helicopter, we are unable to sell local corporations or individuals in San Francisco on the idea of owning their own helicopters. And certainly, this is our objective. By not having a heliport, we are depriving businesses or individuals of this most efficient and most pleasant means of transportation. It is my opinion that having helicopters will substantially aid businesses by making them more effective, and increase the volume of

sales in many different types of businesses. In Illinois, with approximately 29 commercial helicopters in operation, there are 114 heliports, while in California, there are 250 commercial helicopters in operation and only 175 heliports. In other words, in California there is less than one heliport for a commercial helicopter, while in Illinois there are five heliports for every helicopter.

The heliport cannot be classed on a profit and loss basis. It must take its place as a basic asset to the community. It is one of the building blocks providing better service for its traveling citizens, faster air mail and air express, and for service to the new electronic, aerospace and other industries, gravitating to the suburban areas. If you want to put a heliport in San Francisco, you cannot look strictly at the profit and loss basis, and that you must look at it primarily as a public service. A charge should be made to all users of it, but that charge must be low enough so you encourage rather than discourage the use of the facility.

ASSEMBLYMAN GONSALVES: What is the cost of a three-passenger helicopter?

MR. FRANKEL: $30,000.

MR. BEN E. NUTTER, EXECUTIVE DIRECTOR AND CHIEF ENGINEER PORT OF OAKLAND:

The Port of Oakland operates both the Metropolitan Oakland International Airport and the downtown Oakland heliport. It supported the application of San Francisco-Oakland Helicopter Airlines for a certificate of public convenience and necessity, which was recently granted by the Civil Aeronautics Board.

The downtown heliport was constructed by the Port on City of Oakland property in the parking lot serving the Oakland Auditorium in 1961. The arrangement with the City Council is on a temporary basis which may be cancelled upon three months' notice. It was anticipated that operations would be moved from the Auditorium parking lot to the top of the new Alameda County parking garage upon its completion.

However, the Federal Aviation Agency has not approved the roof of the County garage for commercial operations by the single-engine type of helicopter now in use. As a result, operations are continuing at the heliport in the Auditorium parking lot. At either location, however, the investment in facilities is far in excess of the income which has been experienced thus far.

In the first 14 months, from April 1, 1961, to April 30, 1962, we charged SFO Helicopters $50 per month, for a total of $650. Beginning May 1, 1962, this rent was increased to 25 cents for each paying passenger enplaned. Since then, the revenue to the Port has averaged $293 per month, or about $3,500 per year. On the other hand, the cost of the heliport was $20,062.64, not counting land value. To recover the capital outlay in a five year period at 6 per cent interest, pay for insurance and maintenance, our break-even income should total $4,980. The value of the city land, conservatively, is $1,760 per year. So with an annual deficit of $1,480 by the Port, and the city's land value requiring a minimum annual return of $1,760, the total "subsidy" to provide the downtown heliport in Oakland is $3,240 per year.

Prior to the completion of the County garage, with its heliport on the top, the Port had discussed with the County Supervisors its operation of the heliport and the payment to the county of $50,000 at the rate of $10,000 a year for five years as its contribution toward the cost of construction.

No contract has ever been executed, however, as the FAA has not approved commercial operations from that site.

It is apparent, however, that it will take many years, at present traffic levels at 25¢ per passenger, for the Port to recover its investment if commercial operations are approved and the contract is executed.

I think it may be of interest to this committee to note that the plans which we developed for the existing downtown Oakland heliport were provided free to the City of Berkeley, so that its costs were probably lower.

The Board of Port Commissioners entered into the construction of the downtown Oakland heliport and negotiated the proposed arrangement for the Alameda County garage heliport knowing full well that these facilities would not break even, and in fact would be operated at a loss. In doing so, they were acting to provide a utility for the convenience of the public.

If the City Council were to exercise its right to cancel the temporary arrangement for the Auditorium parking lot heliport, and if approval were not given for the County garage operations, it would then be necessary to find a new site. Meanwhile, however, at either location, I think the current need for heliports in the urban center of the Eastbay is satisfied with the downtown Oakland and Berkeley heliports.

The principal use of the helicopter has been to transport passengers to and from the two principal airline airports, and between the airports. Therefore, a new heliport in downtown San Francisco

is one necessity.

The need is even greater from more distant points, since the helicopter provides its greatest time savings for the suburban and outlying traveler. I understand Marin County service will start about February 15. SFO Helicopters also is authorized to serve Contra Costa County and Santa Clara County. These are three counties which are growing in population and industry and need heliports to serve airline passengers.

All opinion seems to be that the Bay Area, because it is split by the Bay and yet is economically intertwined, is especially suited for helicopter operations as an adjunct to the other forms of interurban transportation. I agree with this opinion.

MR. GEORGE LOEBBECKE, CHAIRMAN, AVIATION AND SPACE COMMITTEE, OAKLAND CHAMBER OF COMMERCE:

I should like to make a brief statement in support of scheduled helicopter service in the Bay Area, and should like to bring to your attention that there has recently been constructed a modern heliport atop the new Alameda County Garage in downtown Oakland, supporting in fact the desirability of an urban location.

It has been our observation that availability of helicopters between downtown Oakland and both the Oakland and San Francisco airports has provided a valuable extension of air service for Oakland area travelers. Additional, it has served to interchange travelers between the San Francisco Airport and our airport which we consider to be to the benefit of the overall traffic pattern.

Fast easy travel by helicopter, as compared to the slower and often frustrating surface travel, has resulted in a growing popularity of this means of transport, demonstrating its adoption by our business community.

Further, it is our conviction that the continuing expansion of the scheduled helicopter system to other communities in the area will contribute greatly to our transportation complex. It will provide not only convenient fast service to the airports for additional citizens, but, additionally, will further link together the group of cities so served.

CHAIRMAN CARRELL: The heliport is just an extension of the airport, another phase of the airport problem?

MR. LOEBBECKE: Yes, that's one facet of the situation. We also need easy transportation from the urban areas where businessmen work. I think in the future we will regard helicopter service as an important link between communities; therefore, we require urban heli-

ports to make this efficient service.

MR. DON BYRNE, GENERAL MANAGER, WATERS HELICOPTER CORPORATION:

We are the Hughes Helicopter dealer for San Francisco. Our organization was chartered and conceived in San Francisco in 1962. Our natural marketing area both for sales and helicopter service is in San Francisco. Unfortunately, we are located in Oakland for we have no place to land in San Francisco.

We are faced with the same muddy road dilemma that the automobile faced in the 1920's. Horse-oriented thinking didn't halt the eventual progress of the building of highways and road networks. We are able to even rise above this road network safely; we need our roads in the helicopter industry; we need heliports - not just one, we need lots of them, we need parking and service facilities in metropolitan areas. Most people are familiar with the fact that helicopters can take off and land in an area the size of themselves, fly backwards, sideways and forwards and darned near upside down. But they are not really acquainted with the fact that a safe landing can be made in a helicopter in almost any place that is big enough to physically fit the helicopter. Another thing that really contributes to their safety is the fact that, since hovering is flying, all flight systems, engines, and controls can be checked out while in a hover before ever committing a helicopter to a full take-off. It is features like this which make the helicopter safe enough to transport our President and heads of government. On his last visit to San Francisco, Secretary of Defense MacNamara was landed several times on the top of the Post Office, very close to this new proposed heliport.

Taken as a whole, the Bay Area is much, much larger than the

Greater Los Angeles area. In the Bay Area now there are five approved operational heliports, while in the Greater Los Angeles area there are 110 heliports in operation and no heliport in San Francisco, the hub of the whole Bay Area.

Our industry has a growth rate over the past five years of 300%. Now project this 300% growth rate to the 1,300 helicopters that are now in service and in five and ten years we get astronomical numbers of helicopters. It will not be a problem, at least traffic-wise, of handling them. Sentiments so ably expressed by Mr. Bagan represent the management of the air carriers. This segment of the helicopter industry is responsible for only 2% of the helicopters that are in service. The other 98% we don't ever see. The only reason we do see Mr. Bagan is that he does have such an aggressive organization and he has really gone ahead and set a precedent in many ways.

However, the small operator of helicopters is unable to do quite the work that Mr. Bagan has done in educating the Bay Area in the value of helicopters. The rest of the operators, along with the air carrier, are in the process of trying to educate the public to the relative merits and safety of helicopters. This is a long, uphill struggle and in order to educate the business community and the public at large, we must operate and demonstrate our capabilities. We must have help to do this. We must first show our community, both business and the public, that the metropolitan areas and financial centers can be served by rapid transportation of people and priority cargo, by way of downtown heliports, before our true potential can ever be realized. Our ability to rise above traffic and natural barriers can make metropolitan areas like San

Francisco the most efficient place in which for us to operate in terms of time saved. The day will come in San Francisco when airlines will provide direct service from downtown San Francisco to downtown Stockton and Sacramento and even downtown Los Angeles. Large business firms will have helicopters, to shuttle their execs and their priority cargo and paperwork to their different branches in the Bay Areas. Hospitals, city fire departments, city police departments and post offices and all emergency agencies will be using the helicopter in one capacity or another. We are here now to ask you to plan for that day.

ASSEMBLYMAN WARREN: How would the proposed downtown San Francisco heliport benefit your operations?

MR. BYRNE: In many ways; for instance, to take a simple aerial photo of San Francisco, which accounts for some of our business, we are forced to ask the photographer to get in his car, drive to the Oakland airport, then we can pick him up and fly him back to San Francisco to take his photo, back to the airport, then he drives back home. This is one aspect. We also would use a heliport and parking facilities as a selling tool. We are a sales organization.

One of our contracts is with the Highway Patrol and we could station a helicopter right on one roof for this purpose. This helicopter is only needed in peak periods. An accident on any of the freeways will create an abnormal traffic situation which might need immediate attention.

ASSEMBLYMAN GONSALVES: Have you ever given any consideration to assisting injuries on freeways, taking people by helicopter to the hospital?

MR. BYRNE: Not so much consideration, but we felt we have sped the ambulance on its way. We have gone down close to the scene a couple of times and we have a loud speaker on our helicopter and we ask the people at the scene if there are any injuries. And several times we have gone ahead and radioed through the Highway Patrol network and got the ambulance there that much faster. But it's such a congested area, and the freeways don't have any shoulders for the most part in the metropolitan areas and there's no place to land to pick up the injured. And this does not also come under the scope of our contract. I can foresee, at least if the Highway Patrol is at the scene, helicopters being used as ambulances. All the restrictions go out the window in the case of an emergency. The Highway Patrol could seal off the highway, stop the flow of traffic and let the helicopter in and right back out with the injured person. The highway dimensions are usually wide enough for them to land.

MR. DON BENNINGHOVEN, LEAGUE OF CALIFORNIA CITIES:

Your Committee invitation was referred to our Board of Directors and was discussed at their quarterly meeting held on January 16 and 17. Because of the importance of the subject and the need for a thorough review of regulations and the encouragement of heliports, the League's Aviation Committee was assigned the task of conducting a statewide review of policies and practices of cities toward planning and constructing heliports. The thought was also expressed that the League Committee should consider helicopter service in relation to the total aircraft needs of the State. The League's Aviation Committee will, therefore, include heliport problems in its broader evaluation of municipal responsibility for airport planning and financing which is being undertaken in connection with hearings of both this Committee and the Senate Committee on Transportation. If you believe it would be helpful, we would be pleased to testify at a later date on the results of the League Committee activities. At that time we would be in a much better position to answer your specific questions concerning the attitude of cities in restricting or encouraging the operation of inter-urban helicopter services on a statewide basis.

At this time, however, in an attempt to provide the Committee with the reaction to and status of heliport planning within the Bay Area, we have contacted a number of the cities in order to better

document their current thinking and activities. Generally, the attitude of these cities toward heliports is one of encouragement. It is not possible nor desirable for a large number of cities to maintain airports in the Bay Area or in any other densely populated area. Both land and air space is at a premium and often even a modest airport facility cannot be justified. Many cities, therefore, do not enjoy the advantages of nearby air transportation. Their residents are isolated and must resort to an hour or more automobile trip to the nearest airport as has been documented today by other witnesses. Helicopter service is at least a potential answer to the problem in these communities.

For this reason the cities adjoining the areas under consideration for future heliport sites for the S.F.O. Helicopter Airlines service have been quite competitive in attempting to attract the heliport to their general locale. Martinez, Concord and Contra Costa County have, as you know, been working closely with the helicopter airlines to determine the most feasible site in central Contra Costa County for regular helicopter service. In Marin County several cities have expressed interest in having a heliport within their boundaries. One of the locations under consideration in Marin County was in the unincorporated area adjacent to Sausalito. Apparently, this has already been decided upon. It is our understanding that while there was some initial concern on the part of the Sausalito City Council with the particular heliport site selected, the objection was based primarily on the noise factor. However, because of the relative lack of noise of the new turbine engines, their opposition has been removed. Similarly, it is the hope of a number of cities in Southern Alameda and Santa Clara Counties that the S.F.O. Helicopter Service will be expanded to that area.

For cities, the financing of the heliport and of the required components remains a basic question of relative responsibilities. Some cities are reluctant to invest funds for heliports, parking, fencing and terminal buildings without some guarantee of continual service. Others feel that the heliport serves a large area and should, therefore, be financed by the total area served, and still others believe that helicopter airlines, like the bus lines and railroads, should provide their own facilities.

Throughout the Bay Area there is, however, a much more general interest in public helicopter service than is reflected by this expressed desire for expansion of these existing services.

Heliport planning: Cities within the nine Bay Area Counties are including heliports in their General Plans of land use. For example, Hayward has designated a heliport site in their new Civic Center complex, San Mateo has included a heliport on a soon to be constructed hotel in the center of the city, and Fremont has specified one for their central business district, as has Walnut Creek in the planned Senior Citizen Rossmoor Community. We have received numerous requests for information on heliport planning and site location and have regularly distributed copies of the Institute of

Transportation and Traffic Engineering Study, "Planning for Urban Heliports", and "Your Heliport Design Guide", published by the Heliport Council of America. Also, at the request of city planning departments this subject has often been placed on League Conference programs, though the discussion has related primarily to the Los Angeles area.

Regular procedures are being established by cities for granting heliport permits for private and commercial use. These procedures usually require an initial request in writing stating the need for and intended use of the heliport. The request is processed through the planning commission unless the city's zoning ordinance permits heliports in the area under consideration. Where cities have provided for heliports without the requirement of a conditional use permit, it is usually the industrially zoned area that is so designated. This is true of Richmond and San Jose.

All heliport applications are approved by the Federal Aviation Agency and Federal Space Agency, and also, in most cases, by the California Division of Aeronautics. Cities depend on the evaluation of these agencies to determine the technical qualifications of the heliport with reference to design, location, accessibility and all safety precautions. The city is responsible for establishing actual construction standards and for inspection during construction. Where a city has its own airport the airport manager or airport commission advises the City Council as to the merits of the sites selected prior to the final decision. Special single landing permits are usually processed as an administrative matter by the city, and the city usually requires:

Submission of evidence of a satisfactory alternate landing area and

The presentation of an insurance policy covering property damage and bodily injury liability.

There follows a summary of the general activity of a representative group of cities in the Bay Area concerning heliport planning and development.

Berkeley - Alameda Co. - 111, 268 - Because of the location of the S.F.O. heliport in Berkeley, there has not been the demand that was found elsewhere for other helicopter locations. The city very definitely expressed its encouragement for the heliport by entering into a formal agreement with S.F.O. Helicopter Airlines by which the city agreed to construct a heliport on land leased from the Santa Fe Land Improvement Company and to include land area, fencing, necessary lighting, vehicle parking area and ticketing building. The agreement also calls for a sum to be collected by the airlines on a per passenger basis and for a landing fee for each helicopter other than those operated by S.F.O. Airlines.

Fremont - Alameda Co. - 66,500 - The Planning Commission has evaluated the need for a heliport and a site has been selected within the planned central business district of the city. No formal heliport applications have been received.

Hayward - Alameda Co. - 82,800 - The Hayward Municipal Airport serves as a base for a helicopter school in addition to providing a landing area for private helicopters. Because of the increased use of the Hayward Airport by helicopters several problems have been encountered. Air traffic has been more difficult to control. There have also been some complaints concerning the blowing of dust and dirt around the hangers and fueling pumps caused by the helicopters "taxiing" five or six feet above the ground while enroute to these facilities. As a result of these problems, a heliport pad and service facilities are being planned adjacent to the central tower. The City's Civic Center Complex plan also includes a heliport.

Oakland - Alameda Co. - 367,599 - The city has provided a heliport on an interim basis for the S.F.O. Airlines at the Oakland Auditorium. The facility was provided without cost to the airline. Another heliport is located at the Oakland Airport where a landing fee is charged for its use.

Concord - Contra Costa Co. - 58,000 - The city has not received a formal application for a heliport. The City Council is desirous of having a heliport facility and believes that Buchanan Airport would best serve the needs of the area.

Richmond - Contra Costa Co. - 79,800 - The city's zoning ordinance permits a helicopter site in M-1 and M-3 zones without a conditional use permit (these are the heavy industrial and generally unlimited zones). A use permit is required for location within any other zone of the city. The city staff has investigated possible future sites for heliports and the city has expressed an active interest in planning ahead for helicopter service.

Walnut Creek - Contra Costa Co. - 15,668 - A heliport is being planned in connection with the new Rossmoor Senior Citizen Community. The city has issued the necessary land use permit.

Corte Madera - Marin - 7,350 - The city has been quite anxious to attract a public heliport to the city but to date has been unsuccessful. A number of special permits have been issued for the use of helicopters in connection with promoting the Corte Madera Shopping Center. The City Council has prohibited, with the cooperation of the Merchant's Association, the dropping of objects and advertisements from the helicopter while in flight.

San Mateo - San Mateo Co. - 73,400 - Because of the lack of concentration of industrial plants and the proximity to San Francisco International Airport, the city has not received a request for either a private or public heliport. The development of a full block in the center of San Mateo, however, does include a heliport on the roof of a proposed hotel.

Palo Alto - Santa Clara Co. - 52, 347 - Palo Alto has adopted a regulatory ordinance concerning helicopters and has provided a permit procedure for infrequent helicopter landings.

San Jose - Santa Clara Co. - 288,800 - Heliports are permitted in industrially zoned areas. Actually, three heliport permits have been issued, two of which are near the San Jose Municipal Airport. All permits must be processed through the Planning Commission and apparently an application has never been refused. Special single helicopter landing permits are issued as an administrative matter upon the filing of proper insurance and compliance with Federal Aviation Agency Safety Regulations.

Vallejo - Solano Co. - 61,051 - The city has been enthusiastically seeking a public heliport and for an extension of S.F.O. Airlines service to Vallejo. They are willing to provide the land and construct the heliport if some regular service can be provided.

MR. JOSEPH CHAPMAN, FEDERAL AVIATION AGENCY:

In the district office we are very enthusiastic over the heliport program, and we back all the witnesses that have been here hoping to expand the program. However, a word of caution is in order. So often these programs are started by people without helicopter technical backgrounds, and some of the safety standards get overlooked. In one case in particular the heliport was completed and is not yet approved because some of these things were not taken into consideration. This particular heliport will still be used in the future but is not able to be used now because of some of the peculiar safety standard relating to helicopters. So in the study of heliports, it's important for F.A.A. safety standards to be considered early in the program.

CHAIRMAN CARRELL: F.A.A. does control this program to a certain extent, the same as you do airports?

MR. CHAPMAN: Yes. Our policy on heliports is frankly very sketchy. We're new at this as well as everyone else, but most of our standards are in a publication called "F.A.A.'s Heliport Design

Guide." They are very clearly stated, but so often overlooked.

ASSEMBLYMAN FORAN: I think that the array of witnesses who have appeared before the committee have demonstrated that a heliport facility in San Francisco would do a great deal toward alleviating the congestion on our highways, both with respect to transporting people to and from our airports, and in the inter-city operation. It's an integrated problem within the total transportation picture of the Bay Area.

Whereupon the meeting was adjourned.